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WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

September 21, 2011

TO: Internal File

THRU: Daron Haddock, Permit Supervisor

FROM: Steve Christensen, Environmental Scientist SHC

RE: 2011 First Quarter Water Monitoring, West Ridge Resources, West Ridge Mine, Task ID #3765

The West Ridge Mine is currently operational in the Book Cliff Mountain range of Carbon County, UT. Water monitoring data is submitted quarterly to the Division EDI database. Beginning on page 7-34 of the approved Mining and Reclamation Plan (MRP), water monitoring protocols and sampling requirements are provided for surface water, ground water, monitoring wells and UPDES outfalls in Tables 7-1, 7-2, 7-3 and 7-4 respectively.

1. Was data submitted for all of the MRP required sites? YES ☒ NO ☐

Springs

The approved MRP outlines the monitoring of 10 springs. Four of the springs (SP-12, SP-13, SP-15 and SP-16) discharge from the lower slopes of West Ridge in Whitmore Canyon. Two springs (WR-1 and WR-2) discharge from the upper slope of West Ridge in Whitmore Canyon. One spring (SP-8) discharges in the upper drainage of C Canyon. Hanging Rock Spring (S-80) is located near the northwest corner of the permit area and discharges from the east slopes of Whitmore Canyon. Spring 101 monitors Little Spring at the bottom of West Ridge. Spring 102 is located within Spring Canyon.

None of the 10 spring monitoring sites could be accessed this quarter due to access issues (snow/ice).

Streams

The approved MRP outlines the monitoring of 12 stream sites. Grassy Trail Creek is the only perennial stream in the permit and adjacent areas. Operational sampling is required quarterly for six stream sites (ST-3, ST-8, ST-9, ST-10, ST-13 and ST-15). Sites ST-11 and ST-

12 were added to the water-monitoring program based upon field inspections conducted in 2005. The field inspections were conducted as part of a proposed lease expansion by the Permittee. At the time of the inspections, the Bear Canyon drainage had exhibited measurable flow. As a precaution, sites ST-11 and ST-12 were established within that drainage. Since that time (summer of 2005) neither site has produced appreciable/measurable flow. However, the sites remain as part of the surface water monitoring program and are inspected quarterly.

Stream monitoring site ST-6 was the only site that could be accessed during this quarter. The remaining 11 stream monitoring sites could not be accessed due to access issues (snow/ice).

Wells

Quarterly operational sampling is required for one groundwater-monitoring well (Site DH 86-2).

Monitoring well DH 86-2 was sampled during this quarter.

UPDES

Operational sampling is required monthly for two active UPDES sites (Permit # UT0025640). Site D001 is the mine sites primary sediment pond discharge to the ephemeral 'C' Canyon drainage. Site D002 is the mine-water discharge to the ephemeral 'C' Canyon drainage. Specific limitations and self-monitoring requirements as outlined in the UPDES permit are presented in the table below:

Effluent Characteristics	Effluent Limitations
Flow, MGD (million gallons per day)	1.0
Total Suspended Solids (TSS), ppm	70
Total Iron, ppm	1.3
Oil & Grease, ppm	10
Total Dissolved Solids (TDS), ppm	2,000
pH	9

Based on three sampling events, outfall 001 did not report a discharge this quarter. UPDES Outfall 002 did report discharges during the quarter.

2. Were all required parameters reported for each site? YES ☒ NO ☐

Spring Monitoring Sites: The Permittee was unable to access any of the spring monitoring sites due to snow.

Surface Water Monitoring Sites: Stream monitoring site ST-6 was the only accessible surface water monitoring site this quarter. All required parameters were reported.

Well Monitoring Site: All required parameters were reported for monitoring well DH 86-2.

UPDES: Outfall 001 did not report a discharge this quarter. Outfall 002 did report a discharge this quarter and all required parameters were reported.

3. Were any irregularities found in the data? YES ☒ NO ☐

Surface Water Monitoring Sites-

ST-3- An increase in TDS and its associated components were reported during the 3rd quarter of 2010. No observable flow was reported the 4th quarter of 2010. ST-3 could not be accessed this quarter. When flow is present in the future, the elevated concentrations for TDS will be monitored to determine if a trend is emerging.

ST-9- Elevated concentrations of SO4, Conductivity, Total Hardness and Total Cations were reported for this stream monitoring site during the 4th quarter of 2010. The site could not be accessed this quarter. Continued monitoring will be conducted to determine if a trend is emerging.

ST-6- The reported flow value for ST-6 was significantly higher. A flow value of 1,792 gpm was reported which is 3.29 standard deviations higher than the average flow of 265.5 gpm. As the primary flow component at this monitoring site is mine water discharge, it would appear that the high flow value is a result of increased mine-water discharge. The reported concentrations for T-Fe and TSS were well below the established UPDES discharge requirements.

Groundwater Monitoring Sites-

SP-102- Spring monitoring site SP-102 had reported elevated concentrations/values for dissolved for TDS and its associated components for three previous quarters. As the site could not be accessed, continued monitoring will be needed to determine if a trend is emerging.

SP-12- Spring monitoring site SP-12 has reported elevated concentrations for TDS and its associated components (D-Ca, D-Mg, D-Na, SO4, D-Ca). Elevated TDS concentrations have been reported at this site for the last 6 quarters with the exception of 1st quarter 2010 and this quarter (no access due to snow conditions).

SP-13- Spring monitoring site SP-13 reported elevated concentrations for D-Ca, D-Na, T-Alk., T-hdns., T-Cats during the 3rd quarter of 2010. The reported D-Na concentration for the 4th quarter of 2010 was still elevated. The other parameters had returned to within normal ranges. Continued monitoring will be conducted to see if the D-Na returns to within historic trends.

SP-8- Spring monitoring site SP-8 reported elevated concentrations of D-Na, T-Alk and T-Cats the 2nd quarter of 2010. Elevated concentrations for D-Mg and T-Hardness were reported during the 3rd quarter of 2010. Elevated concentrations of D-Mg and T-Alk were reported for the 4th quarter of 2010. Continued monitoring will be conducted once the site is accessible.

UPDES Sites- (UPDES Permit #UT0025640)

Site D001- UPDES outfall D001 (primary sediment pond at mine site) did not report a discharge this quarter.

Site D002- UPDES Outfall 002 water quality data was obtained three times this quarter. All of the reported concentrations for TSS and TDS were below the compliance limits as established by the UPDES discharge permit. The average T-Fe value (based on 3 sampling events) was 0.61 ppm. The UPDES limit for T-Fe is 1.3 ppm. TSS values were below the detectable range for two of the three sampling events (i.e. <5 ppm). A value of 17 ppm for TSS was recorded for January which is well below the 70 ppm limit for TSS as established by the UPDES discharge permit.

The reported mine water discharge volumes continue to increase. The average flow for the quarter was 1,454.7 gpm based on three sampling events.

4. On what date does the MRP require a five-year re-sampling of baseline water data.

On page 7-35 of the approved MRP, the Permittee commits to collecting baseline samples "from each spring in the monitoring program during the low flow (fall) sampling and from each stream monitoring sites during low flow every five years beginning with the first mid-term review."

Baseline sampling of ground and surface water sites will be required during the 3rd quarter of 2011.

5. Based on your review, what further actions, if any, do you recommend?

Continue to monitor the data irregularities cited above for any trends.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES ☐ NO ☒

7. Follow-up from last quarter, if necessary. YES ☐ NO ☒

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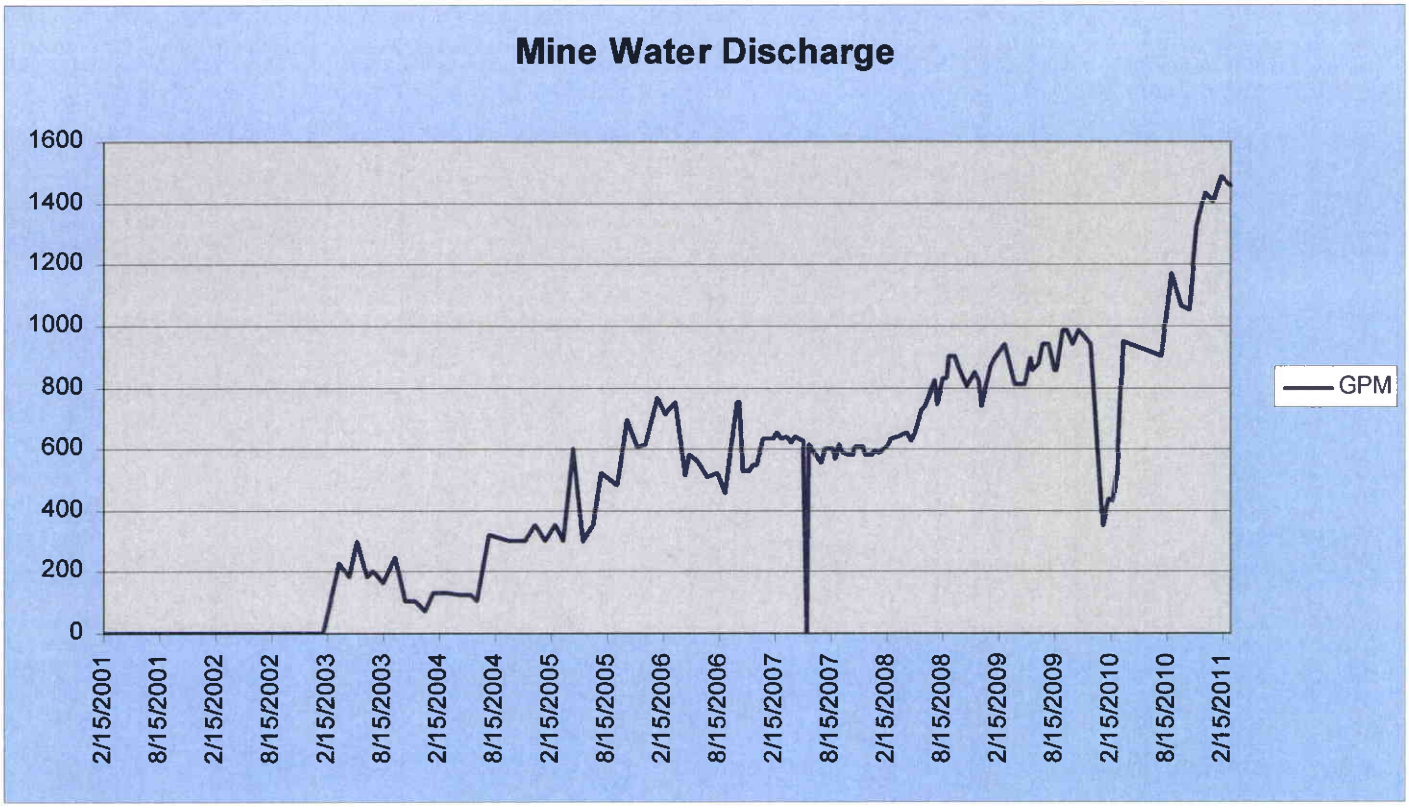
Mine Water Discharge
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1400
1200
1000
800
600
400
200
0
2/15/2001
8/15/2001
2/15/2002
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2/15/2003
8/15/2003
2/15/2004
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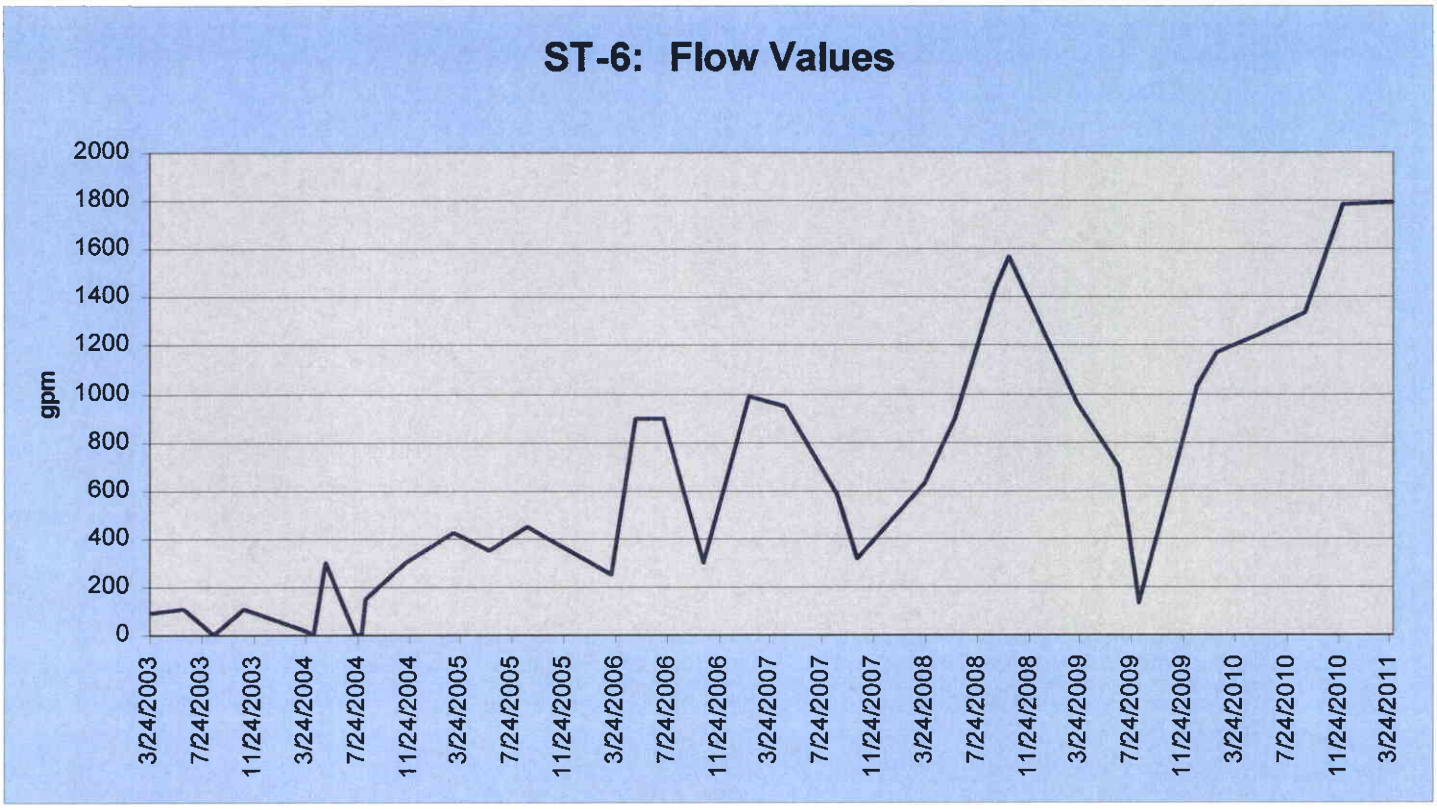
ST-6: Flow Values
gpm
2000
1800
1600
1400
1200
1000
800
600
400
200
0
3/24/2003
7/24/2003
11/24/2003
3/24/2004
7/24/2004
11/24/2004
3/24/2005
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